FIGS. 74 and 75 are schematic side views of a peelable shape memory material activated time dependent release system with a peelable liner pulled from two sides;

FIGS. 76 and 77 are schematic side views of a peelable shape memory material activated time dependent release system with a rod shaped activator;

FIG. 78 is a schematic side view of a peelable dual shell shape memory material activated release system for releasing a substance outside of a predetermined temperature range;

FIG. 79 is a schematic side view of a shape memory material activated device with a membrane between the shell and the substance contained in the shell;

FIG. 80 is a schematic side view of a shape memory material activated release system in the form of an impact shell;

FIG. 81 is a schematic side view of another shape memory material activated release system in the form of an impact shell;

FIG. 82 is a schematic side view of a shape memory material activated release system in the form of an integral impact shell;

FIG. 83 is a schematic side view of another shape memory material activated release system in the form of an integral impact shell;

FIG. 84 is a schematic side view of a release mechanism;

FIG. 84A is a cross sectional view taken along line A-A of FIG. 45;

ewc 8-13-08

FIGS. 84B, 84C, and 84D are schematic perspective views of the cup assembly in exploded, assembled, and released configurations, respectively;

FIG. 85 is a schematic side view of another release mechanism;

FIG. 85A is a cross sectional view taken along line A-A of FIG. 85;

FIGS. 86 and 87 are perspective views of a pull pin release mechanism;

FIG. 88 is a schematic view of a force limited release mechanism;

FIG. 89 is a schematic side view of a thermally powered device driven by a shape memory material activator;

FIGS. 90, 91 and 92 are schematic side views of a shape memory material activated transport device with the thermally powered device in the initial position, with the forward end advanced, and with the aft end advanced, respectively;

FIG. 93 is a schematic side view of a shape memory material activated transport device with the thermally powered device consisting of a shape memory material activator embedded in an elastomeric material;

FIGS. 186, 187, and 188 are schematic side views of a hydraulic arming device, in the unarmed, armed, and path creation positions, respectively;

FIGS. 189 is a schematic side view of a pneumatically arming device;

FIGS. 190 is a schematic side view of a magnetically arming device;

CWC 8.13.08

FIGS. 191, 192, 193, 194 and 195 are schematic side views of a double action arming device, with a cylindrical hollow shell, the shape memory material spring in the austenitic and martensitic shapes, the armed device, and the path creation positions, respectively;

FIGS. 196, 197, 198 and 199 are schematic side views of an arming device, with a peelable shell, in the unarmed, armed, fine tuning, and path creation positions, respectively;

FIG. 200 is a typical shape memory material displacement vs temperature graph.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

This document describes a series of inventions for devices whose principal operation is to create a path through a shell in order to release or admit one or more substances. The path is created with the direct or indirect aid of a shape memory material. The shape memory material acts as a sensor to detect the release temperature and activate or actuate the device to release the substance. The released substance may be utilized alone or may be mixed with a surrounding substance or substances to produce a new substance or group of substances with different properties for further utilization. Mixing can also take place inside the shell between the contained and the admitted substances. Each substance, contained or admitted in the shell or surrounding the shell, can be at any single or combined state of matter; solid, liquid, or gas, whether classifiable or differentiated as one or not. This includes live organisms such as microbes, plant seeds and the like. Further, the substances contained in the shell may be part of a system whose purpose is to control the release or admission of the substance. An example would be a matrix inside the shell that contains the substance to be released or that is ready to absorb the admitted substance. The shell may contain additional means to manage the release rate. Such examples would be a gas bladder that keeps the contents under pressure and accelerates their release upon creation of the path, or a permeable barrier that controls the release or admission rates of the substances. The surrounding substance can be at any static or dynamic state such as still, agitated or flowing. Examples would be a